In the claims:

1. (Currently amended) A method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits, comprising:

preparing an inter-level dielectric substrate;

depositing a layer of Ru on the inter-level dielectric substrate;

depositing a layer of RuO_2 as a diffusion stuffer on the Ru layer;

repeating the depositing of a layer of Ru and a layer of RuO_2 at least once; and

depositing copper on the RuO_2 layer, wherein multiple layers of Ru and RuO_2 are deposited between the inter-level dielectric substrate and the copper layer.

2. Cancelled.

3. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 2, further comprising depositing the RuO_2 layer(s) on the Ru layer(s) using an atomic layer deposition technique.

4. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 2, further comprising depositing the RuO_2 layer(s) on the Ru layer(s) using a thermal oxidation technique.

5. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 2, further comprising depositing the RuO_2 layer(s) on the Ru layer(s) using an electrochemical technique.

6. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 2,

further comprising depositing the RuO_2 layer(s) on the Ru layer(s) using physical vapor deposition.

7. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 1, further comprising depositing the RuO_2 layer on the Ru layer using an atomic layer deposition technique.

8. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 1, further comprising depositing the RuO_2 layer on the Ru layer using a thermal oxidation technique.

9. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 1, further comprising depositing the RuO_2 layer on the Ru layer using an electrochemical technique.

10. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 1, further comprising depositing the RuO_2 layer on the Ru layer using physical vapor deposition.

11. Cancelled.

12. Cancelled.

13. Cancelled.

14. Cancelled.

15. Cancelled.

16. Cancelled.

17. Cancelled.

18. Cancelled.

19. Cancelled.

20. Cancelled.

21. Cancelled.

22. Cancelled.

23. Cancelled.

24. Cancelled.

25. (Currently amended) A method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits, comprising:

preparing an inter-level dielectric substrate;

depositing one or a plurality of layers of RuO_2 directly on the inter-level dielectric substrate; and

depositing copper on the RuO_2 layer.

26. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits of Claim 25, further comprising depositing the RuO_2 layer on the inter-level dielectric using an atomic layer technique.

27. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during fabrication of integrated circuits of Claim 25, further

comprising depositing the RuO_2 layer on the inter-level dielectric using an electrochemical technique.

28. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during fabrication of integrated circuits of Claim 25, further comprising depositing the RuO_2 layer on the inter-level dielectric using a thermal oxidation technique.

29. (Original) The method of controlling and containing copper diffusion during the integration of copper interconnects during fabrication of integrated circuits of Claim 25, further comprising depositing the RuO_2 layer on the inter-level dielectric using a physical vapor technique.

30. Cancelled.

31. Cancelled.

32. Cancelled.

33. (Currently amended) A method of controlling copper diffusion during the integration of copper interconnects during integrated circuit fabrication, comprising using Ru and RuO_2 alone as a diffusion barrier.

34. (Original) The method of controlling copper diffusion during the integration of copper interconnects during integrated circuit fabrication of Claim 33, further comprising eliminating a copper seed layer.

35. Cancelled.

36. Cancelled.

37. Cancelled.

38. Cancelled.

39. Cancelled.

40. Cancelled.

41. Cancelled.

42. Cancelled.

43. Cancelled.

44. Cancelled.

45. Cancelled.

46. Cancelled.

47. (Withdrawn) A method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits, comprising:

preparing an inter-level dielectric substrate;

depositing a layer of RuO_2 as a diffusion stuffer on the inter-level dielectric substrate;

depositing a layer of Ru on the RuO_2 layer; and

depositing copper on the Ru layer,

wherein the method eliminates the need for a copper seed layer.

48. (Currently amended) A method of controlling and containing copper diffusion during the integration of copper interconnects during the fabrication of integrated circuits, comprising:

preparing an inter-level dielectric substrate;

depositing one or a plurality of layers of RuO_2 or Ru or a combination thereof, without additional elements, on the inter-level dielectric substrate; and

depositing copper on the layer of RuO_2 or Ru or a combination thereof,

wherein the method eliminates the need for a copper seed layer.